Overview of the ecology of the aquatic ecosystems of the Clare Valley PWRA and surrounding area

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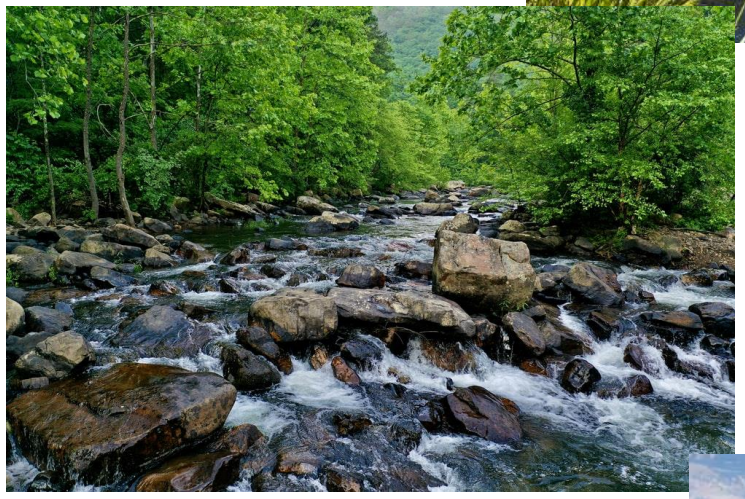
Acknowledgment of Country

Before we start, I acknowledge the Ngadjuri people, Traditional Custodians of the land on which we meet and gather today.

I pay my respects to their Elders past, present and emerging. I extend that respect to all Aboriginal and Torres Strait Islander peoples here today.

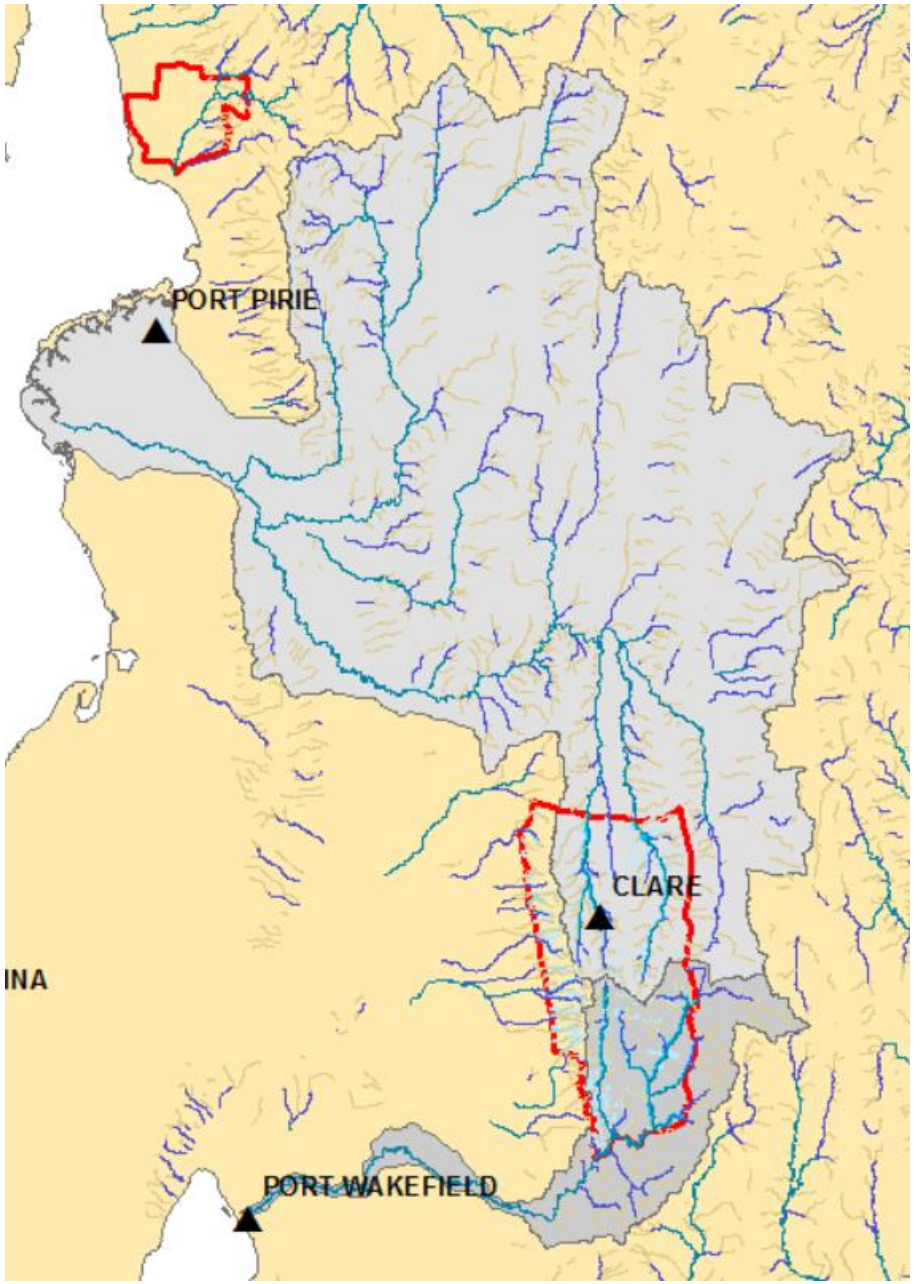
Aquatic ecosystems

- Often referred to as Water Dependent Ecosystems (WDEs)
- Ecosystems linked to a body of water (river, lake, groundwater etc.)
- Modification or loss of link to water results in degradation or loss of ecosystem



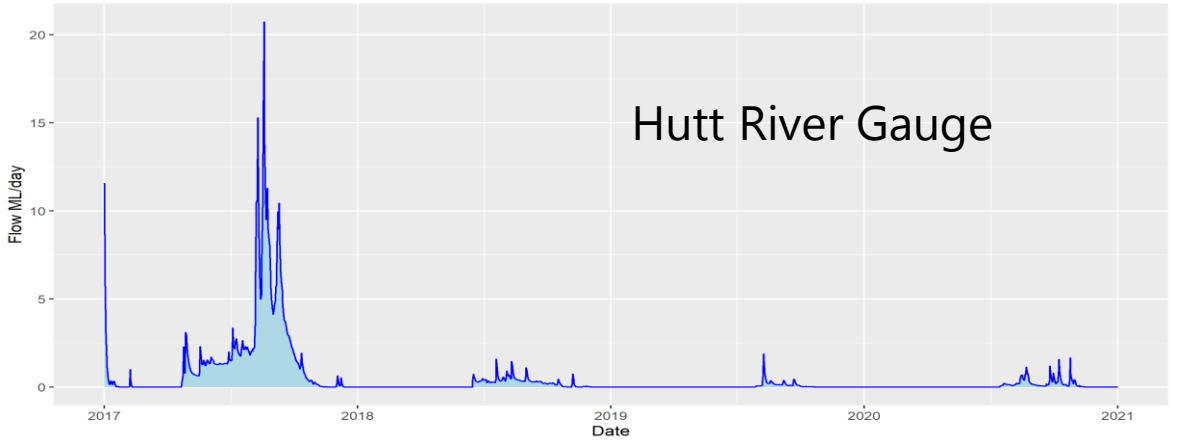
Clare Valley Rivers

- Broughton River Catchment – including Hutt and Hill Rivers
- Wakefield River Catchment – including the Wakefield River and Skillogalee Creek
- Seasonal/ephemeral rivers with permanent pools



What is an ephemeral water course?

- Ephemeral watercourse
  - Used in South Australia to describe all watercourses that cease to flow at some point through the year (though this is not really right)
    - Truly **ephemeral** watercourses are not predictable and flow only after suitable rainfall events
    - **Intermittent/seasonal** watercourses are predicable and have a general flowing season and cease to flow season.
  - Often contain permanent pools



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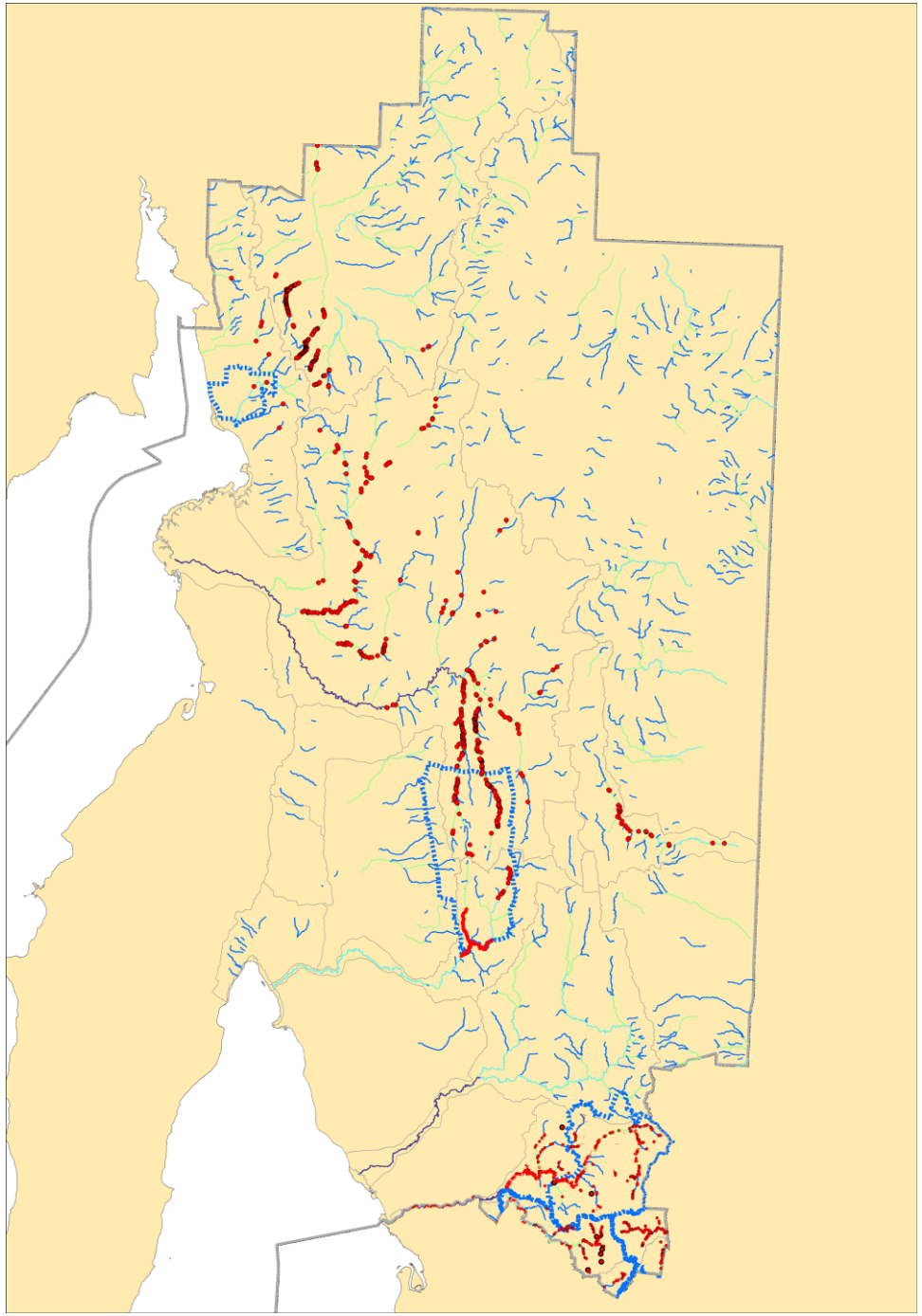
Aquatic ecosystems of the Clare Valley

- All of the rivers of the Clare Valley are seasonal/ephemeral with permanent pools along their length
  - Permanent pools act as a last refuge for aquatic plants and animals during the cease to flow period
  - The drier the landscape, the more important they are
  - Important to consider their role in social and cultural wellbeing as well



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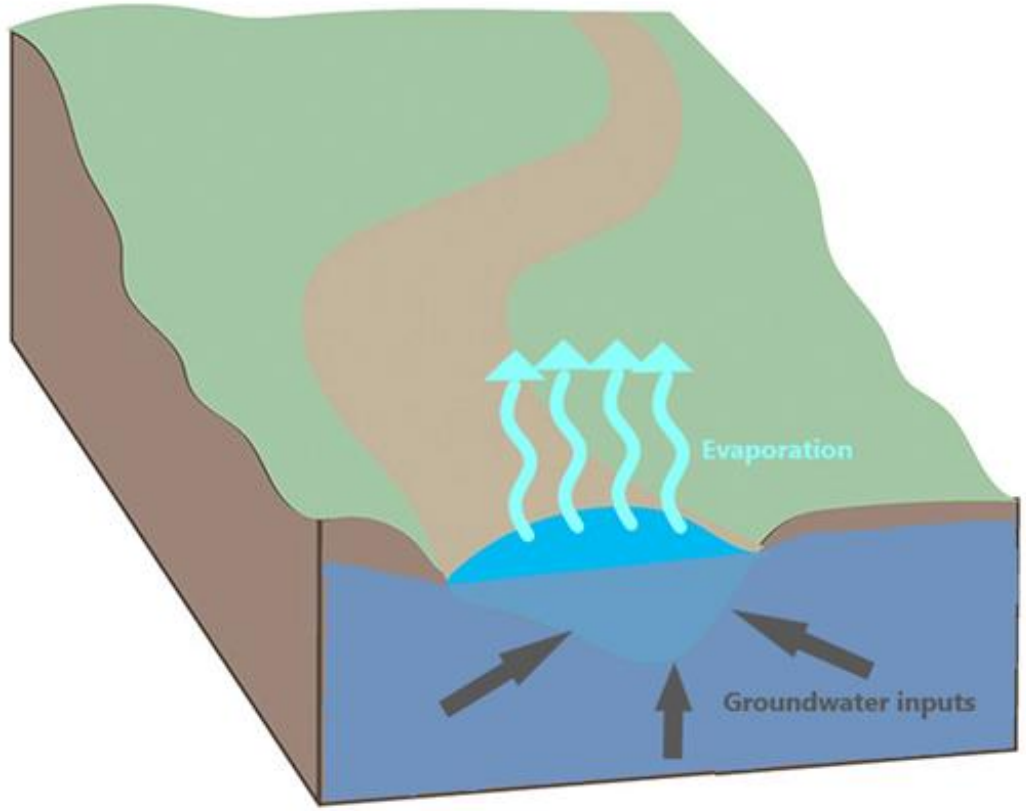
Typical permanent pool

- Permanent pools are generally maintained by groundwater inputs
- Inputs not enough to overcome evaporation/evapotranspiration so pool remains isolated
- As long as groundwater table remains above the bottom of the pool, the pool will remain permanent



Examples

Hutt River – near Andrews

Wakefield River near Mintaro

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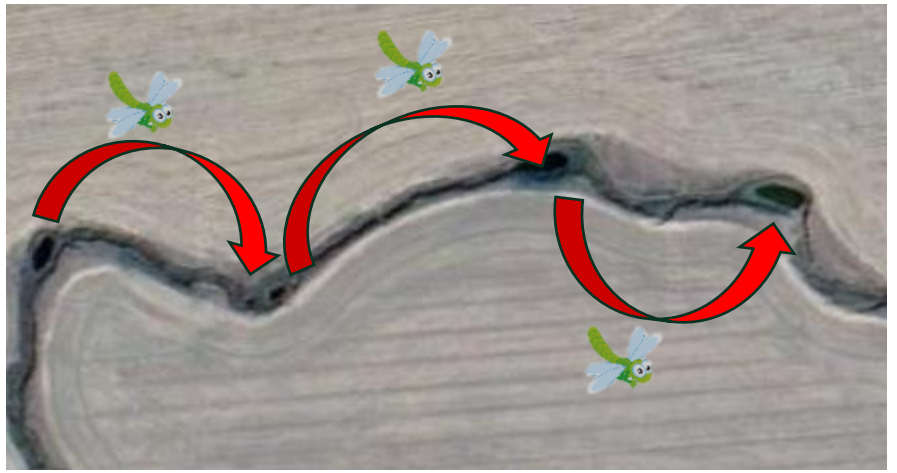
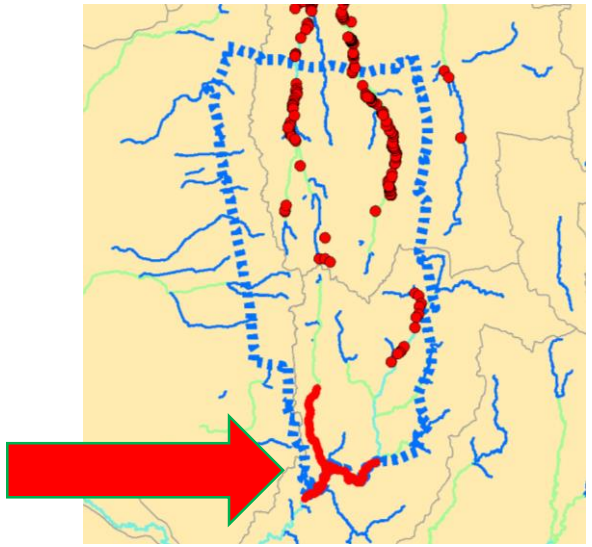
Permanent pools as refuges

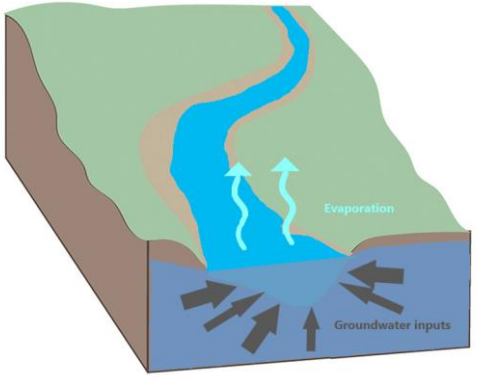
- Two key roles for permanent pools
  - Obligate aquatic flora and fauna (things that have to be in water all the time)
    - Provides the only suitable habitat for these animals and plants during the cease to flow period
    - The loss of permanent pools results in localised extinction of these species
  - Stepping stones for recolonization
    - Non-obligate flora and fauna have different ability to move
    - Pools provide stops along the way to enable plants and animals to reach newly created habitat



Permanent flow



- In some cases the amount of groundwater discharge to the watercourse is enough to maintain flow year round
  - Normally for short stretches
  - Generally good water quality
  - Refuge habitat for more sensitive species
  - Generally high biodiversity
- Critical refuge habitats



Current condition

- Since European settlement the catchments of the Northern & Yorke region have changed dramatically
  - Vegetation clearance
  - Increased erosion
  - Increased nutrient inputs
  - Urban environments and inputs
  - Exotic plants and animals
  - Water resource development

Current condition

- All of the changes to the surrounding environment has had a negative impact on the condition of the aquatic ecosystems of the Clare Valley and surrounding area.
- Impacts and conditions vary across the area, however, no areas would be classed as good, very good or excellent

What is there?

- Fish
  - Gambusia
  - Western Blue Spot Goby
- Bugs
  - Species tolerant of poor water quality
    - Scuds, fly larvae, diving beetles
  - Tolerant predatory species
    - Dragonfly larvae, damselfly larvae
  - Shrimp
- Vegetation
  - Reeds and bulrush
  - Isolated pockets of sedges and submerged vegetation
  - Mix of native and non-native over story

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